

The Chlor-Alkali Industry and Mercury Cell Technology

May 30, 2002

Arthur E. Dungan

Vice President - Safety, Health and Environment

The Chlorine Institute, Inc.

Introduction

- Industry Overview
- Progress Made - Reducing Releases and Use
- Voluntary Commitment - BNS
- Technological and Economic Issues

Chlorine Institute

- Trade Association -215 members
- Primary Mission
 - Foster Safe Production, Handling, and Use of Chlorine and Related Chemicals
- Primary Work Product
 - 150 Technical Publications, Drawings, and Videos

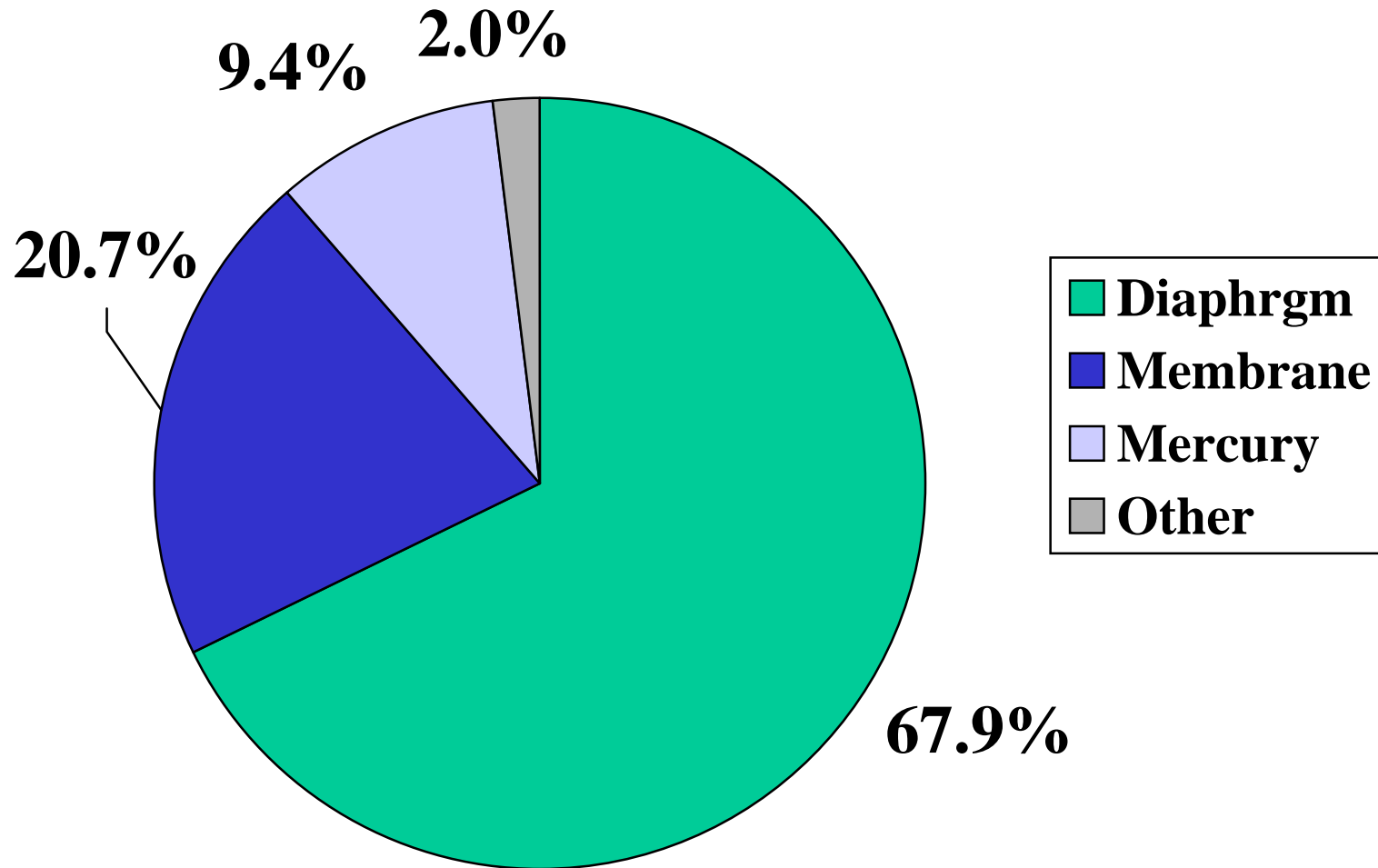
Industry Overview

- 12.6 Million Tons Chlorine Produced in 2001
- 33 Production Facilities in 16 States
- 15 Companies Produce Chlorine in the USA
- Chlorine Demand/Uses
 - Long Term Growth is 1/2% - 1% per year
 - Used in Plastics, Electronics, Computers, Water Disinfection, Crop Protection

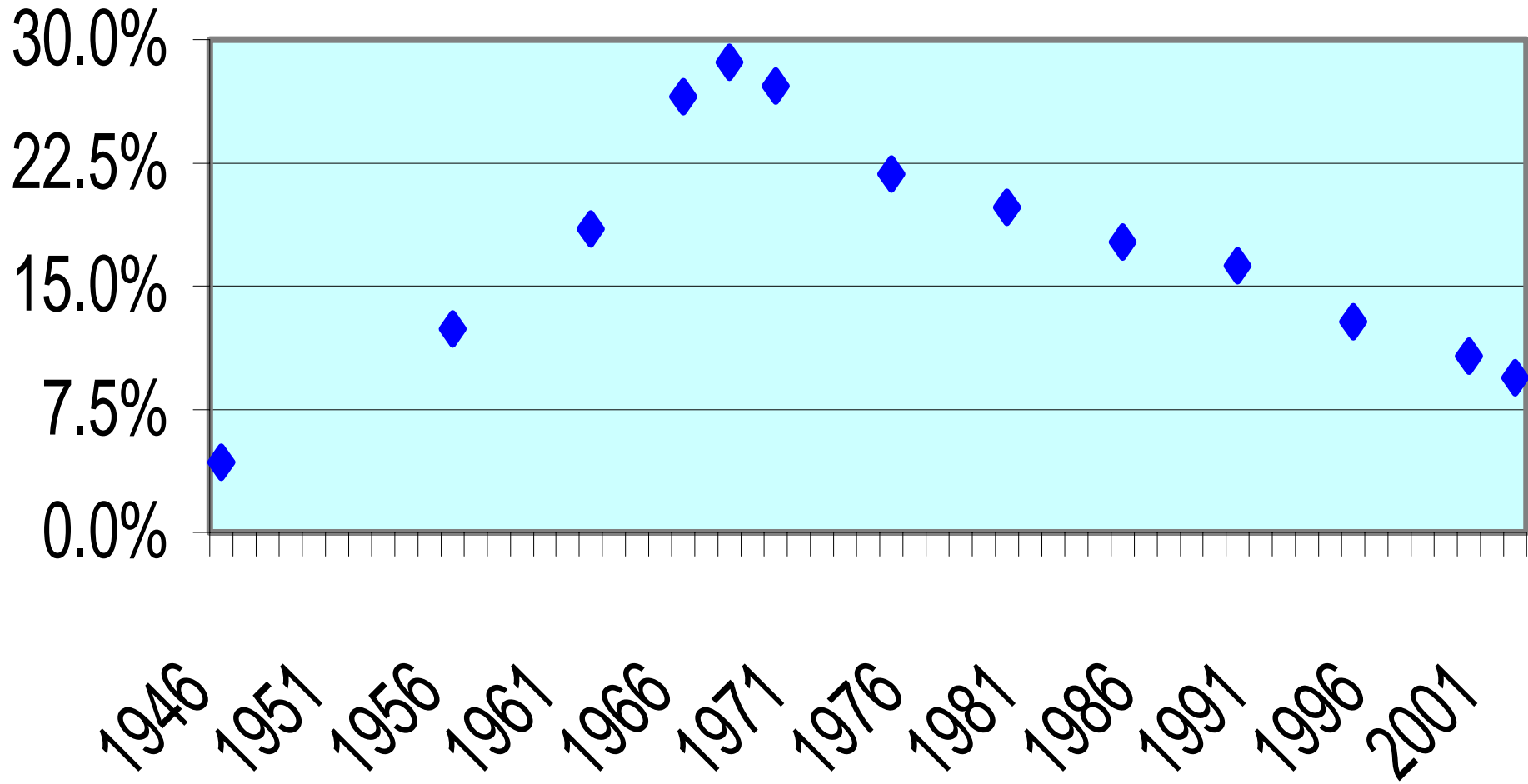
Mercury Cell Technology Overview

- 6 Companies Use This Process
- 10 Mercury Cell Facilities in 9 States
 - (AL, DE, GA, LA, OH, TN, TX, WI, and WV)
- Superior Quality of Co-product Sodium Hydroxide

Production by Technology



Mercury Cell - % of Cl₂ Capacity



Improvements in Managing Mercury

- Minimata Disaster - Late 1960s
 - Concerns About Mercury in the Environment
- Industry Initiatives to Reduce Releases
 - Early 1970s
 - Removal from Water Effluents
 - Sulfide Technology
 - Reductions - 99+%

Improvements in Managing Mercury

- Mid 1970s
 - Reductions in Air Emissions
 - Carbon Treatment/Ion Exchange Technology
 - Housekeeping Improvements - Cell Room
- Late 1970s
 - Reductions in Solid Wastes - RCRA
- Early 1990s
 - Land Disposal Restrictions
 - Thermal Treatment Technology

Current Efforts

- Commitment to Binational Toxics Strategy
- Working with Regulators on a Cooperative Basis to Make Further Reductions
 - MACT Development and Implementation
- Technology Exchange Among Members to Reduce Mercury Releases and Use

Commitment to the Binational Toxics Strategy

- 1996
 - Commitment Made to 50% Reduction in Usage
- 1997
 - Full Understanding of the Commitment with EPA
 - Reduce Mercury Use by 50% or More from the 1990-95 Base Period by 2005
 - Provide EPA with an Annual Report of Progress

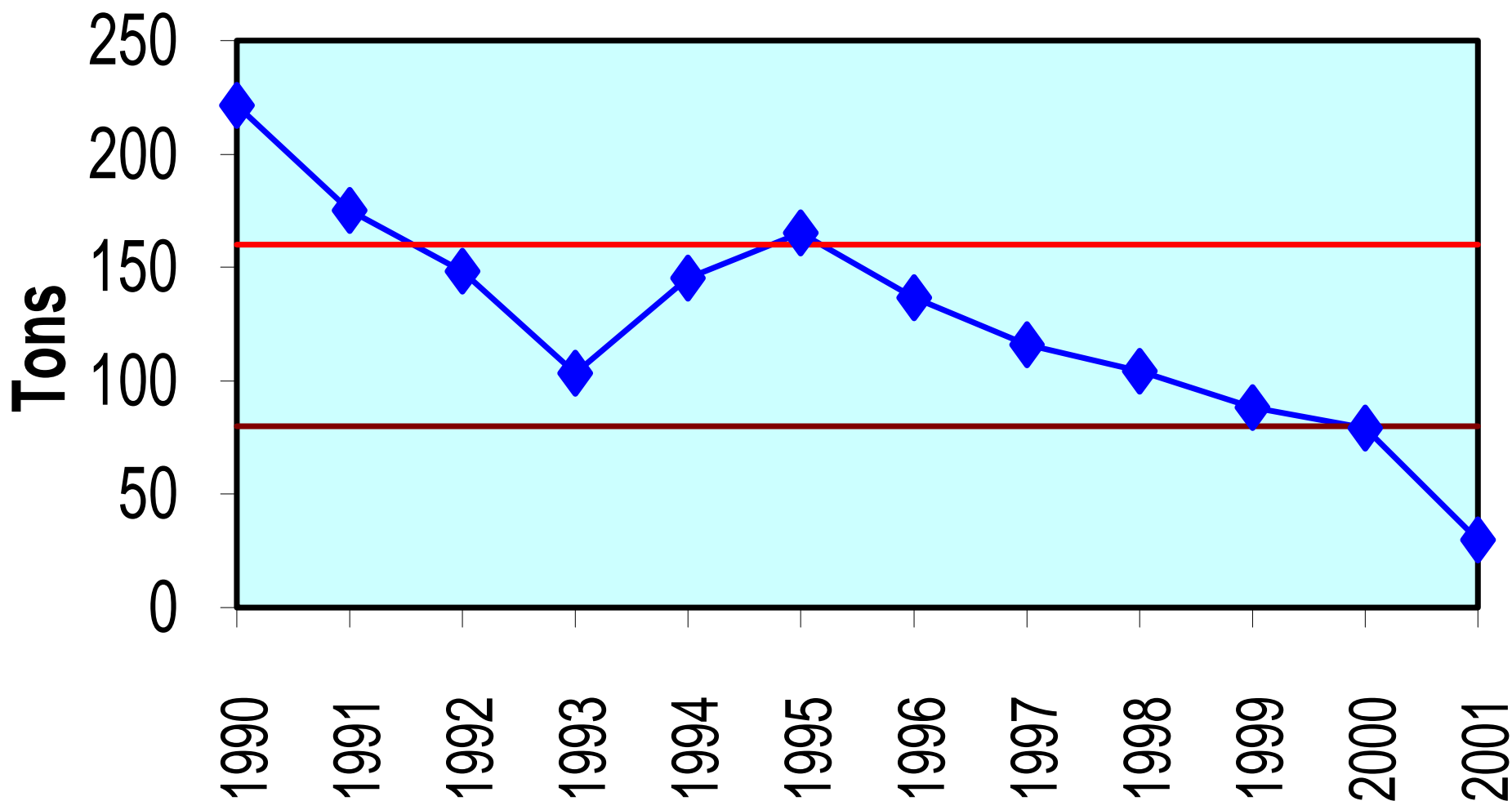
Commitment to the Binational Toxics Strategy (cont.)

- May 1998 - April 2002
 - Annual Reports Issued
 - Fifth Annual Report issued on April 25
 - <http://www.epa.gov/Region5/air/mercury/reducing.html#chlor-alkali> (for past reports)

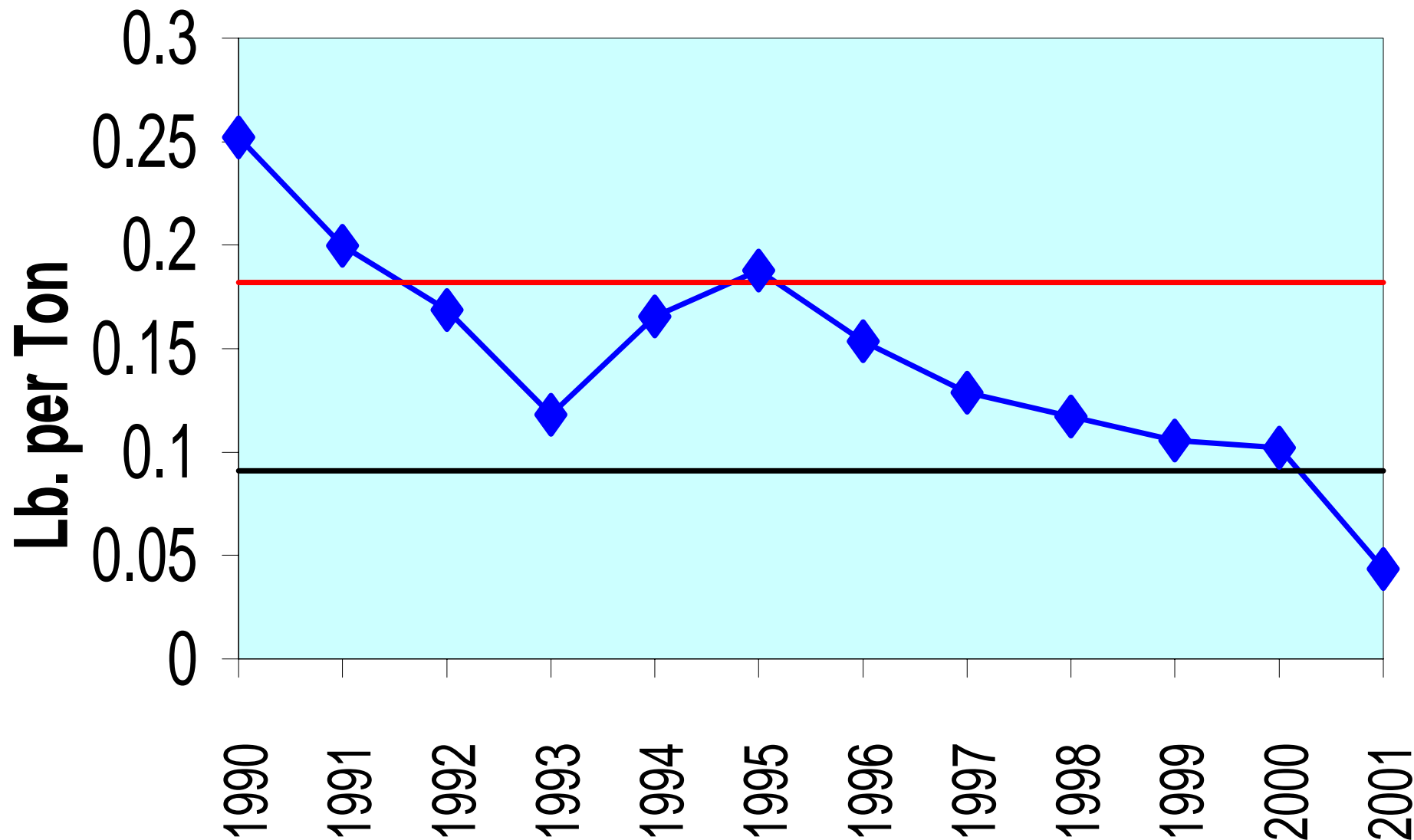
Results to Date

- Mercury use in the base period = 160 tons/year
- Mercury use in 2001 = 30 tons - 81% *reduction*
- Mercury use in the base period = 0.182 pound per ton of chlorine produced
- Mercury use in 2001 = 0.044 pound per ton of chlorine produced - 75% *reduction*

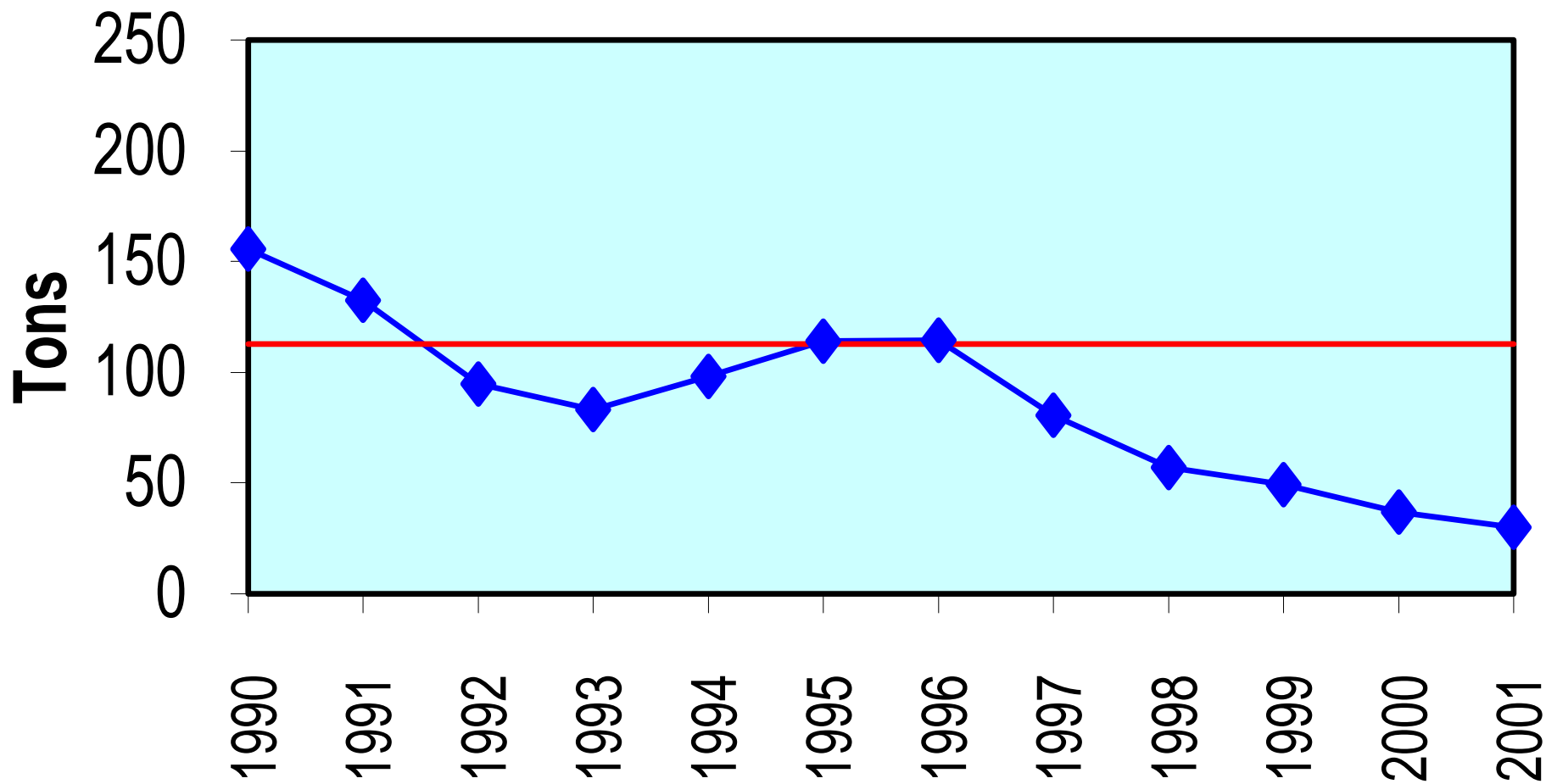
Chlor-Alkali (USA) Mercury Use



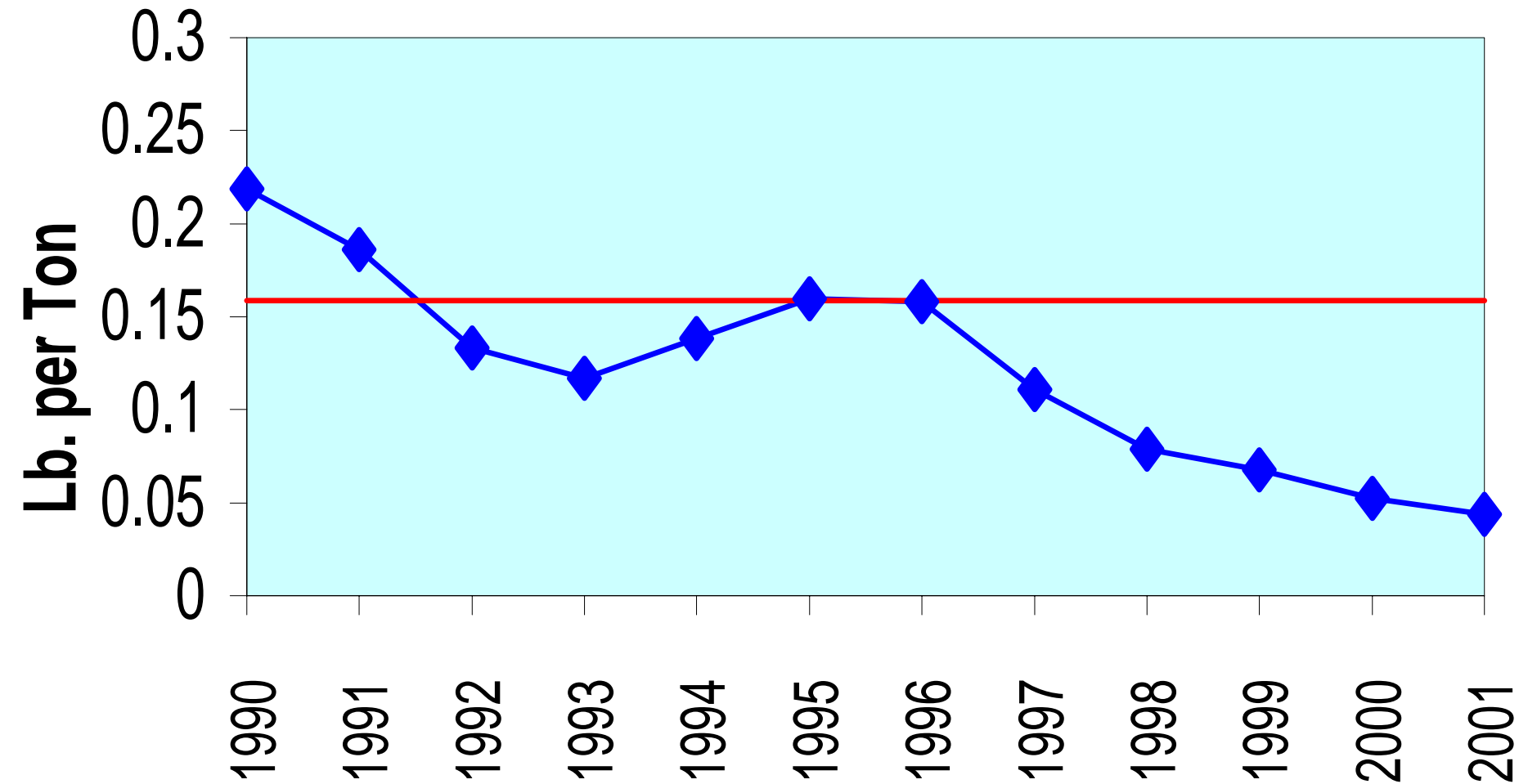
Hg Use per Ton of Cl₂ Production



Mercury Use - 10 Operating Facilities



Hg Use per Ton - 10 Operating Facilities

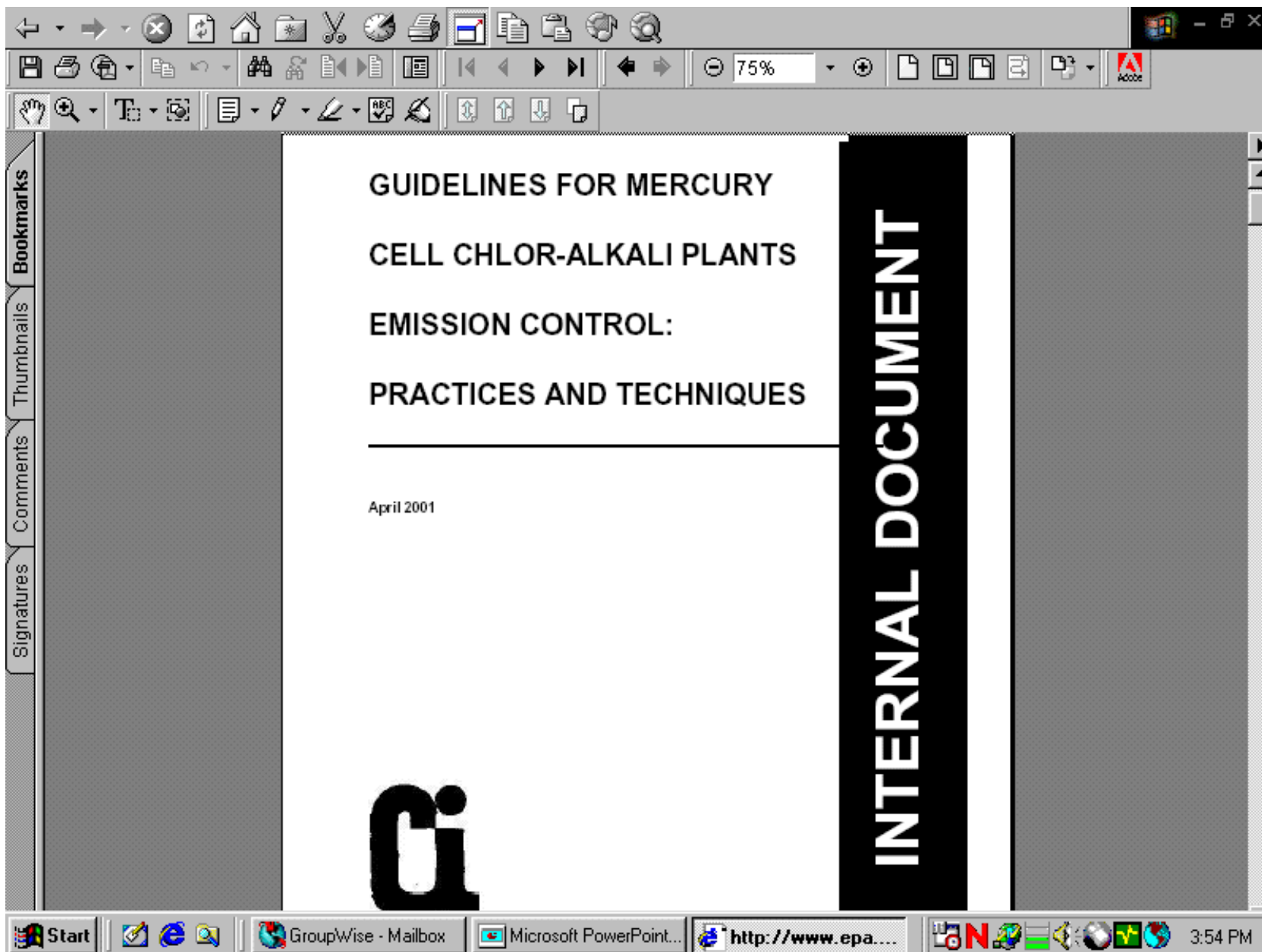


Industry Activities Undertaken to Achieve the Reductions

- Task oriented technical teams to address specific issues
 - Workshops to exchange ideas
 - Guidance documents issued
- Members provide mercury use data to the Institute on an annual basis. The Institute aggregates these numbers for use in the Annual Report to EPA

Technical Workshops

- Annual half day forums to serve as technical exchanges and informational updates
- Multi-day workshops to hold detailed discussions on technical issues
 - Latest - January 2002 - Water effluent -enhanced treatment - TMDL issues
 - Earlier sessions on topics such as cell maintenance; cell operations; housekeeping



Technical Issues

- Releases to Air
 - MACT Technology for Point Sources
 - More Stringent Housekeeping Requirements
 - Control Technology Guidance for Housekeeping
- Mercury Use
 - Guidance for Accounting for Mercury Use

Technical Issues (cont.)

- Mercury in Product - Sodium Hydroxide
 - Guidance for Optimizing Current Technology
 - Technology Options for Further Reductions
- Worker Health Issues
 - Medical Surveillance / Guidance to Physicians
- Handling of Hazardous Wastes
- Mercury in Water Effluent

Our Commitments and Goals

- To Continue to Work Cooperatively with All Parties to Address Mercury Issues Pertaining to Chlor-Alkali Manufacture
- To Achieve Further Reductions in Mercury Use and Releases to the Environment
- That mercury cell chlor-alkali facilities be allowed to continue to operate until the end of their economic life